UNITED STATES PATENT AND TRADEMARK OFFICE

NOTICE OF ALLOWANCE AND FEE(S) DUE

28848	7590	07/12/2004

TOPE-MCKAY & ASSOCIATES
23852 PACIFIC COAST HIGHWAY #311
MALIBU, CA 90265

EXAMINER
HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
2121	

DATE MAILED: 07/12/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,112	10/10/2000	Bradley C. Love	HRL030	4429

TITLE OF INVENTION: METHOD AND APPARATUS FOR INCORPORATING DECISION MAKING INTO CLASSIFIERS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1330	$0	$1330	10/12/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:	If the SMALL ENTITY is shown as NO:
A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.	A. Pay TOTAL FEE(S) DUE shown above, or
B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or	B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 07/04) Approved for use through 04/30/2007.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**
or Fax

Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

28848   7590   07/12/2004

TOPE-MCKAY & ASSOCIATES
23852 PACIFIC COAST HIGHWAY #311
MALIBU, CA 90265

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

	(Depositor's name)
	(Signature)
	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,112	10/10/2000	Bradley C. Love	HRL030	4429

TITLE OF INVENTION: METHOD AND APPARATUS FOR INCORPORATING DECISION MAKING INTO CLASSIFIERS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1330	$0	$1330	10/12/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
HIRL, JOSEPH P	2121	706-020000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent):   ☐ individual   ☐ corporation or other private group entity   ☐ government

4a. The following fee(s) are enclosed:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.   ☐ b. Applicant is not claiming SMALL ENTITY status. See, e.g., 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

(Authorized Signature)   (Date)

TRANSMIT THIS FORM WITH FEE(S)

PTOL-85 (Rev. 07/04) Approved for use through 04/30/2007.   OMB 0651-0033   U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,112	10/10/2000	Bradley C. Love	HRL030	4429

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Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 477 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 477 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.
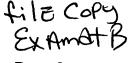
Notice of Allowability	Application No.	Applicant(s)
	09/686,112	LOVE, BRADLEY C.
	Examiner	Art Unit
	Joseph P. Hirl	2421

-- The *MAILING DATE* of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *April 26, 2004*.

2. ☒ The allowed claim(s) is/are *1-6,8-16 , 18-25, 27-28-*.

3. ☒ The drawings filed on *10 October 2000* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some* c) ☐ None of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the

        International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

     1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of

     Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application (PTO-152)

6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *12* .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

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Examiner's Amendment/Reasons for Allowance

1.   An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

In the Claims

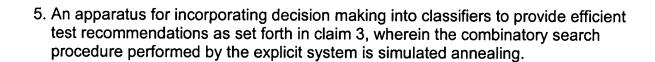2.   Change the claims in accordance with the following:

What is claimed is:
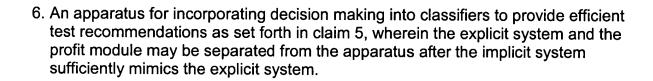
1. An apparatus for incorporating decision making into classifiers to provide efficient
test recommendations, the apparatus comprising:

    a. an explicit system and a classifier each configured to receive a system
state [[dataset]] <u>vector</u> the explicit system connected with the classifier
and operative to iteratively perform a combinatory search procedure
based on the system state [[dataset]] <u>vector</u> to develop a next test
recommendation for the classifier, whereby the classifier performs the
next test to generate an objective weighted score;

    b. a profit module connected with the classifier and with the explicit system
to receive the objective weighted score from the classifier, to add
subjective value to the objective weighted score to determine a profit for
the test, and to provide the profit to the explicit system to enable the
explicit system to i. assess the value of its next test recommendation
and ii. to iteratively generate a best test recommendation based on the
maximization of the profit;

    c. an implicit system configured to receive a system state [[dataset]]
<u>vector</u>, and connected with the explicit system to receive the best test
recommendation for each system state [[dataset]] <u>vector</u>, and to act as
a function estimator to learn to associate best test recommendations
with the system state [[dataset]] <u>vector</u> in order to mimic the explicit
system, thereby to enable rapid decision making in situations that are
either urgent or well-known.

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2. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the explicit system and the implicit system are configured to provide test recommendations to a controller.

3. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the implicit system is a   neural network.

4. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 3 wherein the neural network is a radial basis neural network.

5. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 3, wherein the combinatory search procedure performed by the explicit system is simulated annealing.

6. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 5, wherein the explicit system and the profit module may be separated from the apparatus after the implicit system sufficiently mimics the explicit system.

7. Cancel

8. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 1, wherein the classifier is a probabilistic model.

9. An apparatus for incorporating decision making into classifiers to provide efficient test recommendations as set forth in claim 8, wherein the classifier is Bayesian.
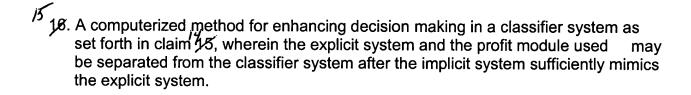
9 10. A computerized method for enhancing decision making in a classifier system, wherein the classifier system includes an explicit system and a classifier, each configured to receive a system state [[dataset]] vector, with the explicit system connected with the classifier; a profit module connected with the classifier and with the explicit system; and an implicit system configured to receive a system state [[dataset]] vector, and connected with the explicit system, the computerized method comprising the steps of:

    a. receiving a system state vector in the explicit system, the classifier, and the implicit system;

    b. determining in the explicit system, based by the feature set, a recommended test;

    c. performing the recommended test [[on]] by the classifier;

    d. determining, via the profit module, the profit from the test performed [[on]] by the classifier;

    e. detecting whether the test performed [[on]] by the classifier maximizes the profit;

    f. performing the receiving step a. through the detecting step a until a test is found which maximizes the profit;

    g. training the implicit system with the system state vector and the test which maximizes the profit; and

    h. repeating steps a. through g. until a desired level of training of the implicit system is reached.

10 11. A computerized method for enhancing decision making in a classifier system as set forth in claim 10, wherein the test that maximizes the profit is provided by either the explicit system or the implicit system to a controller.

11 12. A computerized method for enhancing decision making in a classifier system as set forth in claim 10, wherein the implicit system used is a neural network.

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12/13. A computerized method for enhancing decision making in a classifier system as set forth in claim 12, wherein the implicit system used is a radial basis neural network.

13/14. A computerized method for enhancing decision making in a classifier system as set forth in claim 12, wherein the determining step b. is performed by the explicit system using a combinatory search procedure.

14/15. A computerized method for enhancing decision making in a classifier system as set forth in claim 14, wherein the combinatory search procedure performed by the explicit system in the determining step b. is simulated annealing.
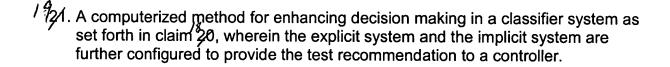
15/16. A computerized method for enhancing decision making in a classifier system as set forth in claim 15, wherein the explicit system and the profit module used   may be separated from the classifier system after the implicit system sufficiently mimics the explicit system.

17. Cancel

16/18. A computerized method for enhancing decision making into classifiers to provide efficient test recommendations as set forth in claim 10, wherein the classifier is a probabilistic model.

17/19. A computerized method for enhancing decision making into classifiers to provide efficient test recommendations as set forth in claim 18, wherein the classifier is Bayesian.

18/20. A computerized method for enhancing decision making in classifiers to provide efficient test recommendations, the computerized method comprising the steps of:

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a. providing an explicit system and a classifier each configured to receive a system state [[dataset]] vector, with the explicit system connected with the classifier, and operative to iteratively perform a combinatory search procedure based on the system state [[dataset]] vector to develop a next test recommendation for the classifier, whereby the classifier performs the next test to generate an objective weighted score;

b. providing a profit module connected with the classifier and with the explicit system to receive the objective weighted score from the classifier, to add subjective value to the objective weighted score to determine a profit for the test, and to provide the profit to the explicit system to enable the explicit system to assess the value of its next test recommendation, and, iteratively, to generate a best test recommendation based on the maximization of the profit;

c. providing an implicit system configured to receive a system state [[dataset]] vector, and connected with the explicit system to receive the best test recommendation for each system state [[dataset]] vector, and to act as a function estimator to learn to associate best test recommendations with the system state [[dataset]] vector in order to mimic the explicit system, thereby to enable rapid decision making in situations that are either urgent or well-known.

21. A computerized method for enhancing decision making in a classifier system as set forth in claim 20, wherein the explicit system and the implicit system are further configured to provide the test recommendation to a controller.

22. A computerized method for enhancing decision making in a classifier system as set forth in claim 20, wherein the implicit system provided is a neural network.

23. A computerized method for enhancing decision making in a classifier system as set forth in claim 22, wherein the implicit system provided is a radial bias neural network.

24. A computerized method for enhancing decision making in a classifier system as set forth in claim 22, wherein the explicit system provided performs the combinatory search procedure by use of simulated annealing.

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25. A computerized method for enhancing decision making in a classifier system as set forth in claim 24, wherein the explicit system provided and the profit module provided may be separated from the classifier system provided after the implicit system sufficiently mimics the explicit system.

26. Cancel

27. A computerized method for enhancing decision making in classifiers to provide efficient test recommendations as set forth in claim 20, wherein the classifier is a probabilistic model.

28. A computerized method for enhancing decision making in classifiers to provide efficient test recommendations as set forth in claim 27, wherein the classifier is Bayesian.

Authorization for this examiner's amendment was given in a telephone interview with Cary Tope-McKay on 6/29/4 and 7/7/4.

Reasons for Allowance

3. Claims 1-6, 8-16, 18-25, and 27-28 are allowed.

4. The following is an examiner's statement of reasons for allowance:

The cited prior art taken alone or in combination fails to teach the claims invention of an explicit system and a classifier system based functionally operating on a system state vector wherein by a combinatory search procedure, a next text is

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determined to establish an objective weighted score whereby a profit module transforms

the weighted score into a profit and further facilitates identifying the value associated

with the next test. Using the results of this analysis, an implicit system is trained that

provides quick reaction but approximate solutions.

The closest prior art (LaPointe, WO 97/29447) teaches neural networks in

decision-making to identify important variables to evaluated observations and test

results and to suggest alternative courses of action. LaPointe fails to teach the use of

explicit systems operating on a system state vector in a combinatorial search with a

payoff function to determine next step action and to then develop an implicit system to

support rapid decision making

5.   Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

Correspondence Information

6.   Any inquiry concerning this information or related to the subject disclosure

should be directed to the Examiner, Joseph P. Hirl, whose telephone number is

(703) 305-1668. The Examiner can be reached on Monday – Thursday from

6:00 a.m. to 4:30 p.m.

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If attempts to reach the Examiner by telephone are unsuccessful, the

Examiner's supervisor, Anthony Knight can be reached at (703) 308-3179.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of

"Proposed" or "Draft" for the desk of the Examiner).

Joseph P. Hirl

July 7, 2004

Anthony Knight
Supervisory Patent Examiner
Group 3600

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